Claims

What is claimed is:

1. A method of communicating information in a wireless cellular communication system, the method comprising the steps of:

communicating information between a plurality of subscriber units of the system and a base station in a cell of the system over at least one of an uplink and a downlink; and

separating communications on the uplink from communications on the downlink using orthogonal frequency division multiplexing.

2. The method of claim 1 wherein the system is a fixed wireless loop system.

3. The method of claim 1 further including the step of separating communications with at least a subset of the plurality of subscriber units in the cell using at least one of a code division multiple access, a time division multiple access technique and a frequency division multiple access technique.

4. The method of claim 1 further including the step of assigning a first subset of M orthogonal frequency division multiplexed carriers to the uplink and a second subset of the M carriers to the downlink.

5. The method of claim 4 further including the step of repeating the assigning step for each of a plurality of time slots, such that the number of carriers in the first and second subsets varies across the time slots in accordance with uplink and downlink traffic demands.

6. The method of claim 4 further including the step of applying an inverse Fourier transform operation to generate the M orthogonal frequency division multiplexed carriers in at least one of a downlink transmitter and an uplink transmitter of the system.

7. The method of claim 4 further including the step of recovering the M orthogonal frequency division multiplexed carriers by applying a Fourier transform operation in at least one of a downlink receiver and an uplink receiver of the system.

8. An apparatus for communicating information in a wireless communication system, the apparatus comprising:

a base station operative to communicate with a plurality of subscriber units in a cell of the system over at least one of an uplink and a downlink, wherein communications on the uplink are separated from communications on the downlink using orthogonal frequency division multiplexing.

9. The apparatus of claim 8 wherein the system is a fixed wireless loop system.

10. The apparatus of claim 8 wherein communications with at least a subset of the plurality of subscriber units in the cell are separated using at least one of a code division multiple access, a time division multiple access technique and a frequency division multiple access technique.

11. The apparatus of claim 8 wherein the base station is further operative to assign a first subset of M orthogonal frequency division multiplexed carriers to the uplink and a second subset of the M carriers to the downlink.

12. The apparatus of claim 11 wherein the base station is further operative to repeat the assignment of carriers to uplink and downlink for each of a plurality of time slots, such that the number of carriers in the first and second subsets varies across the time slots in accordance with uplink and downlink traffic demands.

13. The apparatus of claim 11 wherein an inverse Fourier transform operation is applied to generate the M orthogonal frequency division multiplexed carriers in a transmitter of the system.

14. The apparatus of claim 11 wherein a Fourier transform operation is applied to recover the M orthogonal frequency division multiplexed carriers in a receiver of the system.

15. An apparatus for communicating information in a wireless communication system, the apparatus comprising:

a subscriber unit operative to communicate with a base station in a cell of the system over at least one of an uplink and a downlink, wherein communications on the uplink are separated from communications on the downlink using orthogonal frequency division multiplexing.

16. The apparatus of claim 15 wherein the system is a fixed wireless loop system.

17. The apparatus of claim 15 wherein communications with at least a subset of the plurality of subscriber units in the cell are separated using at least one of a code division multiple access, a time division multiple access technique and a frequency division multiple access technique.

18. The apparatus of claim 15 wherein the code division duplexing assigns a first subset of M orthogonal frequency division multiplexed carriers to the uplink and a second subset of the M carriers to the downlink.

19. The apparatus of claim 18 wherein the assignment of carriers to uplink and downlink is repeated for each of a plurality of time slots, such that the number of carriers in the first and second subsets varies across the time slots in accordance with uplink and downlink traffic demands.

20. The apparatus of claim 18 wherein an inverse Fourier transform operation is applied to generate the M orthogonal frequency division multiplexed carriers in a transmitter of the system.

21. The apparatus of claim 18 wherein a Fourier transform operation is applied to recover the M orthogonal frequency division multiplexed carriers in a receiver of the system.